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ABSTRACT

This Digest addresses the benefits of formative assessment and provides examples and resources to support its implementation. Formative assessment is the diagnostic use of assessment to provide feedback to teachers and students over the course of instruction. Since the goal of formative assessment is to gain an understanding of what students know and don't know in order to make responsive changes in teaching and learning, techniques such as teacher observation and classroom discussion have an important place alongside analysis of tests and homework. P. Black and D. William (1998) encourage teachers to use questioning and classroom discussion to increase their students' knowledge and improve understanding. They suggest several strategies to involve all students. Teachers can assess students' understanding in a number of ways that include interviews and brief, in-class writing assignments designed to determine understanding. Tests and homework can be used formatively, as can portfolios. Because formative assessment is tightly linked with instructional practices, teachers must consider how their classroom activities, assignments, and tests support learning aims and allow students to communicate what they know, and they must use this information to improve teaching and learning. Some useful resources for teachers interested in formative assessment are listed. (Contains 15 references.) (SLD)

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The Concept of Formative Assessment

Carol Boston

While many educators are highly focused on state tests, it is important to consider that over the course of a year, teachers can build in many opportunities to assess how students are learning and then use this information to make beneficial changes in instruction. This diagnostic use of assessment to provide feedback to teachers and students over the course of instruction is called formative assessment. It stands in contrast to summative assessment, which generally takes place after a period of instruction and requires making a judgment about the learning that has occurred (e.g., by grading or scoring a test or paper). This article addresses the benefits of formative assessment and provides examples and resources to support its implementation.

Purpose and Benefits of Formative Assessment

Black and Wiliam (1998b) define assessment broadly to include all activities that teachers and students undertake to get information that can be used diagnostically to alter teaching and learning. Under this definition, assessment encompasses teacher observation, classroom discussion, and analysis of student work, including homework and tests. Assessments become formative when the information is used to adapt teaching and learning to meet student needs.

When teachers know how students are progressing and where they are having trouble, they can use this information to make necessary instructional adjustments, such as reteaching, trying alternative instructional approaches, or offering more opportunities for practice. These activities can lead to improved student success.

Black and Wiliam (1998a) conducted an extensive research review of 250 journal articles and book chapters winnowed from a much larger pool to determine whether formative assessment raises academic standards in the classroom. They concluded that efforts to strengthen formative assessment produce significant learning gains as measured by comparing the average improvements in the test scores of the students involved in the innovation with the range of scores found for typical groups of students on the same tests. Effect sizes ranged between .4 and .7, with formative assessment apparently helping low-achieving students, including students with learning disabilities, even more than it helped other students (Black and Wiliam, 1998b).

Feedback given as part of formative assessment helps learners become aware of any gaps that exist between their desired goal and their current knowledge, understanding, or skill and guides them through actions necessary to obtain the goal (Ramaprasad, 1983; Sadler, 1989). The most helpful type of feedback on tests and homework provides specific comments about errors and specific suggestions for improvement and encourages students to focus their attention thoughtfully on the task rather than on simply getting the right answer (Bangert-Drowns, Kulick, & Morgan, 1991; Elawar & Corno, 1985). This type of feedback may be particularly helpful to lower achieving students because it emphasizes that students can improve as a result of effort rather than be doomed to low achievement due to some presumed lack of innate ability. Formative assessment helps support the expectation that all children can learn to high levels and counteracts the cycle in which students attribute poor performance to lack of ability and therefore become discouraged and unwilling to invest in further learning (Ames, 1992; Vispoel & Austin, 1995).

While feedback generally originates from a teacher, learners can also play an important role in formative assessment through self-evaluation. Two experimental research studies have shown that students who understand the learning objectives and assessment criteria and have opportunities to reflect on their work show greater improvement than those who do not (Fontana & Fernandes, 1994; Frederikson & White, 1997). Students with learning disabilities who are taught to use self-monitoring strategies related to their understanding of reading and writing tasks also show performance gains (McCurdy & Shapiro, 1992; Sawyer, Graham, & Harris, 1992).

Examples of Formative Assessment

Since the goal of formative assessment is to gain an understanding of what students know (and don't know) in order to make responsive changes in teaching and learning, techniques such as teacher observation and classroom discussion have an important place alongside analysis of tests and homework.

Black and Wiliam (1998b) encourage teachers to use questioning and classroom discussion as an opportunity to increase their students' knowledge and improve understanding. They caution, however, that teachers need to make sure to ask thoughtful, reflective questions rather than simple, factual ones and then give students adequate time to respond. In order to involve everyone, they suggest strategies such as the following:

- Invite students to discuss their thinking about a question or topic in pairs or small groups, then ask a representative to share the thinking with the larger group (sometimes called think-pair-share).
- Present several possible answers to a question, then ask students to vote on them.
- Ask all students to write down an answer, then read a selected few out loud.

Teachers might also assess students' understanding in the following ways:

- Have students write their understanding of vocabulary or concepts before and after instruction.
- Ask students to summarize the main ideas they've taken away from a lecture, discussion, or assigned reading.
- Have students complete a few problems or questions at the end of instruction and check answers.
- Interview students individually or in groups about their thinking as they solve problems.
- Assign brief, in-class writing assignments (e.g., "Why is this person or event representative of this time period in history?)

(The November/December 1997 issue of *Clearinghouse* magazine is devoted to practical ideas for formative assessment. See especially Mullin and Hill for ideas for history classes, McIntosh for mathematics, Childers and Lowry for science, and Bonwell for higher education.)

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In addition to these classroom techniques, tests and homework can be used formatively if teachers analyze where students are in their learning and provide specific, focused feedback regarding performance and ways to improve it. Black and Wiliam (1998b) make the following recommendations:

- Frequent short tests are better than infrequent long ones.
- New learning should be tested within about a week of first exposure.
- Be mindful of the quality of test items and work with other teachers and outside sources to collect good ones.

Portfolios, or collections of student work, may also be used formatively if students and teachers annotate the entries and observe growth over time and practice (Duschl & Gitomer, 1997).

Resources for Teachers Interested In Formative Assessment

Formative assessment is tightly linked with instructional practices. Teachers need to consider how their classroom activities, assignments, and tests supports learning aims and allow students to communicate what they know, then use this information to improve teaching and learning. Two practitioner-oriented books that offer many helpful ideas about, and examples of, classroom assessments are *A Practical Guide to Alternative Assessment* (Herman, Aschbacher, and Winters, 1992) and *Classroom Assessment Techniques: A Handbook for College Teachers* (Angelo and Cross, 1993).

The Northwest Regional Educational Laboratory has put large sections of its helpful training kit, *Improving Classroom Assessment: A Toolkit for Professional Developers* online at http://www.nwrel.org/assessment/toolkit98.asp. The readings, overheads, exercises, and handouts could help groups of teachers think through assessment issues in their schools. The Assessment Training Institute provides some free newsletter and journal articles about classroom assessment on its Web site (http://www.assessmentinst.com/) as well as publications, videos, and training sessions for a fee. A recent issue of the *Maryland Classroom* newsletter from the Maryland State Department of Education features a lead article on effective feedback in the classroom with example responses from an assignment involving persuasive text (http://www.msde.state.md.us/Maryland%20Classroom/2002_05.pdf).

The National Research Council (2001) has produced a useful, accessible book on classroom assessment in science that contains many interesting vignettes about how teachers can adjust their teaching based on their observations, questioning, and analysis of student work. While the anecdotes are specific to K-12 science teaching, the chapters about the documented value of formative assessment on classroom achievement, as well as what it requires in terms of teacher development and how classroom assessment relates to summative assessment such as state tests, have broad applicability. See http://www.nap.edu/catalog/9847.html for a browsable version of *Classroom Assessment and the National Science Education Standards.*

Training and professional development in the area of classroom assessment are essential in order to provide individual teachers with the time and support necessary to make changes. Teachers need time to reflect upon their assessment practices and benefit from observing and consulting with other teachers about effective practices and about changes they would like to make (NRC, 2001). Black and Wiliam (1998b) recommend setting up local groups of schools-elementary and secondary; urban, suburban, and rural-to tackle formative assessment at the school level while collaborating with other local schools. They anticipate that challenges will be different in different subject areas and suggest that external evaluators could help teachers with their work and collect evidence of effectiveness. They also point to potential conflicts between state assessments and classroom assessments, where the external tests can shape what goes on in the classroom in a negative way if the emphasis is on drill and test preparation versus teachers' best judgment about learning.

Teachers generally need to undertake or participate in some summative assessment as a basis for reporting grades or meeting accountability standards. However, the task of summative assessment for external purposes remains quite different from the task of formative assessment to monitor and improve progress. While state tests provide a snapshot of a student's performance on a given day under test conditions, formative assessment allows teachers to monitor and guide students' performance over time in multiple problem-solving situations. Future research might examine how teachers deal with the relationship between their formative and summative roles, how teachers' classroom assessments relate to external test results, and how external test results can be made more helpful in terms of improving student performance.

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